

# Hypodermic needles in the neuropathic foot of a patient with diabetes



*Education*

*Éducation*

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## Abstract

A 54-YEAR-OLD WOMAN with insulin-dependent diabetes mellitus, diabetic neuropathy, neuropathic arthropathy of the feet and a plantar ulcer underwent plain radiography, which showed 2 clipped-off hypodermic needles, of which she had been unaware, in the soft tissue of one foot. This previously unreported complication is clinically instructive in that it demonstrates the importance of counselling patients about the protection of insensitve extremities. This case also has public health implications, suggesting as it does that the still-common practice of breaking hypodermic needles before disposal should be strongly discouraged.

## Résumé

UNE FEMME DE 54 ANS atteinte de diabète sucré insulino-dépendant, de neuropathie diabétique, d'arthropathie neurogène des pieds et d'un ulcère plantaire a subi une radiographie simple qui a révélé la présence de deux aiguilles hypodermiques brisées, ce qu'elle ne savait pas, dans le tissu mou d'un pied. Cette complication jamais signalée auparavant est révélatrice sur le plan clinique, car elle démontre qu'il importe de conseiller les patients au sujet de la protection des extrémités insensibles. Ce cas a aussi des répercussions sur la santé publique, car il indique qu'il faudrait décourager vivement la pratique encore répandue qui consiste à casser les aiguilles de seringues hypodermiques avant de les jeter.

Peripheral neuropathy of a symmetric sensorimotor type is a common complication of diabetes mellitus.<sup>1</sup> Loss of sensation increases the risk of damage to the weight-bearing joints and of penetration injury; the resulting infection may threaten life and limb.<sup>2-4</sup> The importance of protecting insensitve extremities and ensuring that people with diabetes mellitus use proper techniques for needle disposal is highlighted by the case presented here, in which 2 hypodermic needles were found embedded in the foot of a diabetic patient. A recent publication<sup>5</sup> described 2 people with diabetes and impaired sensation of the feet who discovered thumb tacks protruding from their feet after they heard a ticking noise while walking barefoot; in both cases, the thumb tacks were obvious and were associated with significant soft-tissue infections. To our knowledge the presence of fragments of insulin needles in the foot, completely buried and without any overlying signs of them, has not been previously reported, but it may be more common than the literature suggests. The case reported here also raises the question of whether diabetic patients are placing themselves at unnecessary risk through their needle disposal practices.

## Case report

A 54-year-old woman with insulin-dependent diabetes mellitus, diabetic neuropathy and neuropathic arthropathy of the feet was referred for management of a plantar ulcer located beneath a significant midfoot deformity. Plain radiographs

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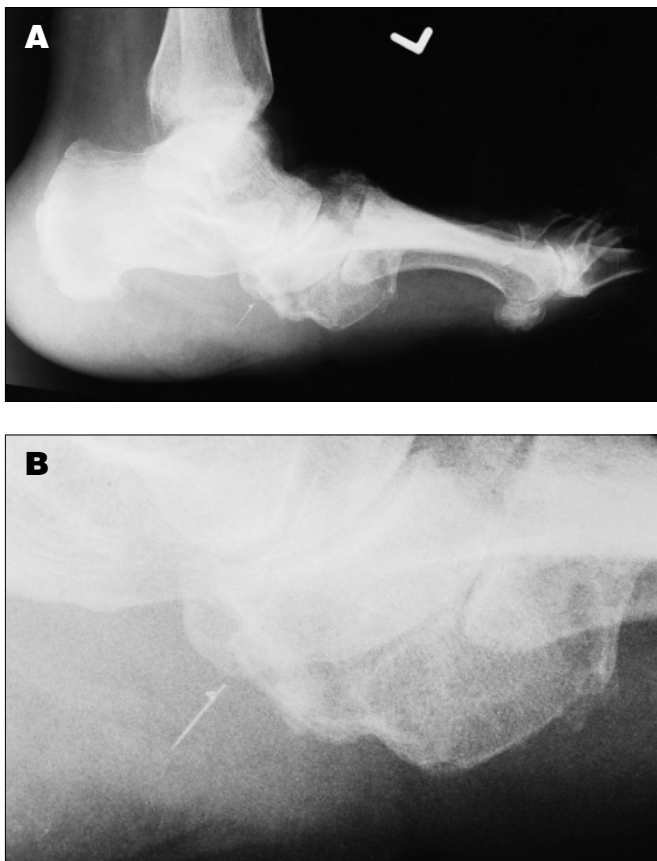
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(obtained to help rule out osteomyelitis) showed 2 clipped-off hypodermic needles in the soft tissue of the plantar aspect of her left foot, one beneath the anterior calcaneus and the other beneath the proximal phalange of the second toe (Fig. 1). There were no clinical signs of puncture, foreign bodies or infection, and the patient had been unaware of these needle fragments.

The patient reported that she routinely injected insulin and disposed of needles in her carpeted bedroom, where she sometimes walked barefoot. After performing an injection, she used the needle cap to break the needle tip from the hub and disposed of the pieces in the bedroom garbage bucket.

The needles in her foot were apparently not associated with the ulcer and were not removed. We prescribed footwear that would accommodate her midfoot deformity and redistribute pressure away from the site of the ulcer. We also counselled her about more appropriate disposal of needles (such as placing them intact in a puncture-resistant container) and the importance of protecting her insensitive feet. She has since had the bony prominence excised, the ulcer has healed, and she remains ambulatory.



**Fig. 1:** Lateral radiograph of the left foot and ankle (A) illustrates neuropathic arthropathy and 2 clipped-off hypodermic needles, one near the anterior calcaneum (B) and the other near the proximal phalange of the second toe.

## Comments

People with diabetes mellitus who have associated peripheral neuropathy are at increased risk of foot ulcers. Of the amputations undergone by people with diabetes, about two-thirds are precipitated by such ulcers.<sup>3,6</sup> Educating people with diabetes about protecting their insensitive extremities is important<sup>1,7</sup> and should include instructions about avoiding situations that could lead to burns or trauma, correctly fitting shoes, checking shoes for foreign objects before putting them on, inspecting the feet frequently, and disposing of needles and lancets in puncture-resistant containers.<sup>8</sup>

A review of the literature revealed some of the issues associated with needle-stick injuries. A retrospective study of prophylactic immunoglobulin given for accidental percutaneous or permucosal exposure to hepatitis B in England and Wales from 1988 to 1991 revealed that 51% of 3535 accidental exposures occurred in the community and 45% in hospitals.<sup>9</sup> Of the community exposures, 53% were due to discarded hypodermic needles. In a survey of 100 diabetic patients in New York City,<sup>10</sup> 83 disposed of their insulin syringes directly into the trash, 51 breaking the needle before disposal and 32 disposing of the intact needle and syringe. Only 14 patients used puncture-resistant containers. In another survey, in Atlanta,<sup>11</sup> 93 of 100 patients taking insulin (2 of whom were HIV positive) reported that they put their syringes into the trash; 54 bent or broke the needle before disposal, and 35 made no attempt to contain exposed needles. Only 4 used puncture-resistant containers. Of the patients described in these studies, then, approximately half used the disposal practices of the patient described in our case report, bending or breaking the needle before disposal to prevent surreptitious use by others.

The results of these previously published surveys suggest that our patient's practices were not unusual. But given the needle-replacement programs now in place<sup>12</sup> and the inappropriateness of insulin syringes for illicit drug use, are diabetic patients placing themselves at risk unnecessarily by breaking their needles after use? Even if the risk of illicit reuse of such needles does exist, needle breakage appears to create an unacceptable risk for patients with diabetes.

In addition to creating a risk for the needle user, such unsafe needle disposal techniques may place the public at risk of exposure to infectious agents, such as hepatitis B and HIV. Fortunately, there is some indication that hospital needle-stick injuries have declined recently,<sup>9</sup> possibly because of education, better communication and more convenient placement of containers for needle disposal.<sup>13</sup> Although the rate of needle-stick injuries in the community appears to have been constant in England and Wales



between 1988 and 1991,<sup>9</sup> a decrease in the incidence of needle-stick injuries has been demonstrated in communities where education programs have been started.<sup>13</sup>

This case report has both clinical and public health implications, illustrating as it does the importance of protecting insensitive extremities and of education about safe needle disposal.

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